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ORIGINAL ARTICLE

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Physical activity and the impacts of built environment on the use of neighboring sports equipment by elementary and high schools: The case of the "Blue, White, Move" [Bleu, Blanc, Bouge] skating rink in Montreal-North

Authors' Contribution:
A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
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Abstract

Background: *Evaluate how neighboring sports equipment is used by elementary and high schools to reinforce physical activity among youth. Analyze the impacts of built environments on the forms of use of this type of equipment and attempt to distinguish the positive and negative effects of its installation.*

Material/Methods: *22 semi-led interviews were undertaken among elementary and high school participants and managers of the skating rink. 33 phases of observation were made with the SOPLAY grid. Data from the interviews was analyzed with Atlas software in order to categorize the information. The information from the observations was processed with SPSS software in order to calculate certain levels of frequency.*

Results: *The frequent use of the rink by the schools leads us to believe that there really was an appropriation of the sports equipment. Nevertheless, this appropriation is incomplete, mainly because of a lack of information, of accessibility, and of animation. Concurrently, the size of the group, the types of offered activities, and the number of accompanying adults per student highly influenced the level of student participation and physical activity.*

Conclusions: *The skating rink's appeal should be reinforced through a closer collaboration between the acting managers of the rink and of the schools. Concurrently, in order for the schools to truly consider the skating rink as an educational sports facility, various human and logistics supports coupled to targeted communication and animation strategies should be implemented.*

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Introduction

Sedentariness, particularly in young people, has become a world-recognized problem. Its contrary, physical activity and the practice of sport, has several beneficial effects, including many on the level of psychological wellbeing, mental health, social integration, social competence, etc. In this respect, recent research demonstrates that individuals can make personal lifestyle choices that influence their physical and mental health; however, these choices are highly conditioned by the environment in which they live [1]. Therefore, it seems interesting to notice how the built environment plays a central role in the choices and motivations pushing various persons to adopt active lifestyles [2]. The built environment is here defined as the set of elements of the physical environment, excluding natural elements, transport infrastructures, places of habitation, etc. [3]. The notion of a built environment exerts its influence on the physical activity of individuals through three central factors: accessibility, appeal, and security [4]. However, these three elements take on at once an objective component, revealing the physical and technical characteristics of the built environment, and a more subjective component tied to individual perceptions [5].

At the onset, let us consider accessibility as the first factor of influence. Accessibility has three principal dimensions: economic accessibility, symbolic and social accessibility, and finally geographical accessibility [6]. These dimensions refer to the individual or group's capacity to consume (financial and economic capacities), to attain (proximity in relation to living and work places) or to gain benefits (personal appeal and individual perceptions) of the particular resource. The second factor of influence of the built environment on physical activity is how the resource (park, sports equipment, etc.) appeals to its potential users [7]. This concept, however, takes on many dimensions, such as the esthetics and cosmetics of the practice sites, the presence of vegetation, lighting-related ambiences, the quality of the urban furnishing, and the efficient upkeep of the spaces dedicated to physical activity [8]. The third and last factor of influence of the built environment on physical activity is security. In this respect, much research has demonstrated the importance of adequately fitting out the spaces adjoining the sports equipment in view of reinforcing the user's sense of security [9, 10].

Accordingly, this article aims to present results of research that analyze the types of use of an exterior skating rink by elementary and high schools of the Montreal-North borough and thereby to evaluate the impacts of the built environment on the schools' practice of sport. This research structures its questioning around three central objectives:

1) What are the principal types of use of the skating rink by the elementary and high schools of the borough?
2) How and in what terms does this equipment reinforce or influence the teenagers' physical activity?
3) What are the positive and negative aspects of the skating rink and its site of insertion on the schools' practice of sport?

Material and methods

This article presents a case study based on the case of the skating rink "Blue, White, Move" [*Bleu, Blanc, Bouge*] and structured around a mixed design. The study was approved by the Université du Québec à Montréal ethics committee. One should note that in May 2009 the Montreal-North borough submitted a request to the Montreal Canadiens Children's Foundation in the goal of welcoming the "Blue, White, Move" project[1]. This flagship project of the Montreal Canadiens Children's Foundation (of the Montreal Canadiens professional hockey team) was launched in January 2009 and aims to build five outdoor skating rinks to the official dimensions of North-American hockey in Montreal's underprivileged neighborhoods. On a socio-economical level,

[1] The naming of the *Bleu, Blanc, Bouge* project [here translated "Blue, White, Move"] is not insignificant. It is a reference to the *Bleu Blanc Rouge* ["Blue, White, Red"], the popular nickname of the Montreal Canadiens professional hockey team. The term *rouge* ["Red"] has been replaced by *bouge* ["Move"] in order to create a pun with a link to the public health objective of the Montreal Canadiens Children's Foundation.

the Montreal-North borough's population is characterized by a majority of tenants (72.8%), of immigrants (33%), and of poorly educated residents (35% of the population of 15 years of age or older do not have a diploma). One also finds in Montreal-North a high population density, quite a low average annual revenue of $23,088 and a relatively high unemployment rate of 12.5% [11].

Study sample

In regard to our qualitative sampling, all the elementary and high schools of the borough were contacted by way of their principals and physical education teachers. However, only 10 institutions out of 21 accepted to participate in the research. Accordingly, 16 interviews were led and then completed by discussions with the skating rink supervisors, and representatives of the Montreal-North borough, as well as of the Montreal Canadiens Children's Foundation. On the subject of our quantitative sample, the retained observation phases were selected randomly based on the skating rink's list of reservations made by the schools of the borough.

Data collection

Two tools of data collection were used as part of this research. 22 semi-led interviews were conducted, each 90 minutes in duration. These interviews, organized around 45 open-answered questions, help in understanding how individuals use, appropriate, perceive, and manage this neighboring sports equipment. These interviews have allowed us also to outline more specifically the factors impeding the use of the skating rink by these schools.

Also, 33 phases of observation of one to two hours were led through the SOPLAY grid (System for Observing Play and Leisure Activity in Youth). This observation grid allows differentiatingand to retracingevents that have unfolded on a site and the uses made by its users. For example, during the scan of an activity, it was possible to outline the skaters'profiles, the intensity of pursuedphysical activity, the type of adoptedphysical activity, the social impact of skating, the accessibility of the investigated site, the presence of supervision, the availability of equipment, the facility's esthetics and its level of upkeep. It should be noted, however, that three principal areas of observation were targeted during this research: 1) the skating rink, 2) the changing rooms, and 3) the Le Carignan Park.

Data analysis

The data obtained from the interviews was analyzed with Atlas software in order to underline textual frequency on the problematic of the research and to proceed thereby to the categorization and the regrouping of the data. As for data obtained by observation, it was processed with the SPSS software in order to calculate certain levels of frequency and thereby extricate certain analytic tendencies.

Results

Results from interviews

Understandably, the educational establishments use the skating rinkmainly during organized practices. Indeed, the schools are responsible for 89% of the scheduled reservations. 83% of these reservations requested by educational establishments are made by elementary schools, mainly located less than one kilometer from the rink. The other reservations are made by local community organizations. According to diverse actors of the school environment, it is easier for elementary schools to use the skating rink than it is for high schools, principally because of the management and size of groups. Contrary to elementary students, high school students often change groups and teachers.

The installation of the skating rink plays an important role, especially for nearby schools that can count now on a new exterior sports facility. For the principal of an adjacent school, the installation is principally responsible for the increase in his students' physical activity. For these students, the establishment of activities on this equipment outside of the time allotted to physical education classes increases considerably the number of hours they devoted to physical activity. These activities have allowed also a great number of children to learn to skate and have given

them a taste to practice this sport. Beyond teaching this young generation how to establish a healthy lifestyle, certain interveners in the school environment affirm that the skating rink seems to play the role of a social integration agent in this multiethnic borough, hockey and winter sports having a strong cultural connotation in Québec.

In addition, the repeated use of the skating rink by the schools of the borough leads us to think that they appropriated definitely the sports equipment. Nevertheless, this appropriation appears incomplete to many actors, chiefly because of lack of communication, of involvement of diverse organizations, and of accessibility. In this respect, the members of the English-speaking schools we met with did not know they had the possibility to reserve the equipment. In terms of accessibility, few dispute the choice of the Le CarignanPark for the rink's localization. According to many of the interviewed teachers, the schools' appropriation of the space should be pursued outside of class hours through looser types of practice. However, this freer appropriation will not happen as long as the loan of equipment (skates, helmets) remains confined to organized practices. Considering the financial insecurity of the population in the Montreal-North borough, one would normally deduce that the purchase of sports equipment is not a priority. This lack of accessibility, according to the vast majority of the interveners in this environment is a hindrance to the population's appropriation of the equipment. An elementary school teacher illustrates well the consensus that rules over the matter:

> "Because our parents are poor, it therefore becomes limiting. Because we lend them (skates) to our students. We supplement with the location [of skates] at the rink when we go there for students with feet a bit too big or for which we don't have the right size. But if the student goes there later and does not have skates, he will not pursue then the appropriation."

Beyond the need of introducing a loan service for equipment, the interviewed interveners expressed in great majority the necessity of animating the skating rink. According to some, the animation would solicit further this less active population that seems uninterested in sports. An elementary school principal explains that "There should be people to stimulate less active people. We have to demonstrate the playful aspect of accessibility. We must also communicate better the information regarding this equipment. We must demystify our clientele's potential mistaken opinions that the equipment is, for example, dangerous."

Results from observations

The observations carried out during the periods reserved by the school establishments allowed us to detect certain elements that can influence the participants' level of activity. First of all, the size of the group using the skating rink plays an important role in its activity. Indeed, we have noticed how, as groups reduce in size, people making up the groups tend to be more active. Inversely, the larger the group, the greater are the risks of observing a larger number of inactive members. Of the groups observed for members deemed passive or active, 66% had a number of 40 pupils or more. Moreover, of the groups observed having a number of 30 pupils and more, 57% have a level of activity judged as being passive or active. The other 43% all had a ratio of one active accompanying adult on the ice per 12 young skaters.

The type of activity offered to the users also influences their activity on the ice. Thus, a group of 60 people can be very active if one offers an activity or a game that pleases the majority of the group members. Furthermore, the ratio of accompanying adults on the ice per student seems to be a corollary of their participation; the more there are accompanying adults on the rink per student, the greater the potential for a high level of student activity. Moreover, the accompanying adult's implication in the animation of the activity also promotes group activity. Thus, the more an accompanying adult is involved and suggests concrete and playful activities, the more a group will be active. Accordingly, an accompanying adult who is simply present on the rink and is not invested in the activity generally generates a rather passive group activity where one might often observe young people left to themselveswho cannot even skate.

Discussion

The schools of the Montreal-North borough, in particular elementary schools, use the skating rink rather often. This report can also be explained by the fact that these elementary schools have smaller groups/classes than those in high schools. Thus, they can easily organize various collective activities on the rink. Our observations and interviews have also allowed us to shed light on a concurrent fact: more often than not, the high school groups using the equipment are comprised of students failing at school or presenting various learning difficulties. In fact, the heightened presence of such groups on the skating rink is related to the size of the classes. It is easier for these groups to come skating on the rink than it is for more conventional high school classes, since they are smaller and always supervised by the same teacher instead of having one teacher per subject. This thereby allows for the scheduling of more substantial time slots for physical activity, instead of the usual 75 minutes, thus allowing these groups to easily access the skating rink.

This report explains how the size of the group is a central element during the planning and the setting up of activities on the rink. In regards to other students of these high schools, our observations reveal the fact that very few physical and health education classes are programmed specifically on the skating rink. These institutions only organize school activities on the rink during collective excursions, for which groups/classes can be comprised of more than 60 students. This observation leads us to think that the skating rink does not necessarily seem to be viewed as a genuine educational sports facility by the schools' administrations, but rather as a leisure or recreational facility. This fact tends to be verified by many of our interviews, where one may ascertain that various school establishments neither seem to know it is possible to reserve time slots to schedule physical activity and health classes nor seem to wish to use this equipment because of lack of interest or lack of human resources. At first sight, this element appears to be linked to a communication and involvement problem namely between schools and managing institutions. However, after making verifications, we find that communication is carried out normally and adequately even among the less involved institutions, such as the English-speaking schools. Rather, the problem seems tied to a lack of available resources to accompany the groups/classes to the skating rink and then animate the physical activity sessions.

Concurrently, for both elementary and high schools, our observations demonstrate how certain forms of scheduling and animation of group activities are likely to increase the students' level and intensity of practice:

1) The smaller the group, the more students tend to be active;
2) The more the proposed activity is appreciated and known by the group, the more the group is active on the skating rink;
3) The more there are accompanying adults on the ice per student, the higher the level of student activity and the more effective the students' acquisition of knowledge of the sport being taught;
4) The more the accompanying adults are proactive and dynamic, the higher the students' activity level.

These observations seem to go without saying, especially if one consults the many reports on teaching physical education that give an account of these learning practices [12-13]. However, our observations and our interviews display an obvious gap between a discourse being held by the actors of the schools and the reality observed on the skating rink. In fact, their discourse agrees with these forms of scheduling and of animation and they affirm that they are scheduling them with their groups/classes. Nevertheless, most of our observations demonstrate that these learning practices are not always applied. Thus, it appears essential for certain local interveners to act on the aforementioned elements by developing various collaborations and other support programs with the schools in order to increase the appeal of these organized practices and, by the same token, to encourage these young students to use the skating rink again outside of school hours.

Conclusions

The planning of new sports equipment must generally deal with the availability of spaces and certain existent economic constraints. Locations are rarely optimal for all categories of users. The challenge often lies in the capacity to maximize the location through the participation of local actors. In the case of the installation of this new skating rink, the experience appears to be concluding on several levels, but still needs adjustments. Our results demonstrate that a closer collaboration must be set up particularly between the managing actors and the high schools of the borough. The high schools only infrequently use the equipment, mainly due to problems with the management and size of their groups and because of time slots too short to include transportation to and from the infrastructure, as well as practice. In order for these schools to consider the skating rink as a genuine sports facility, and not simply an occasional site of leisure, it is our opinion that various human and logistic supports coupled with targeted strategy communications must be set up. Concurrently, different after-school activities could be scheduled at the rink through partnerships with physical education teachers of the schools, certain coaches of sport clubs in the borough, and various local public actors. These activities would allow the young people to be initiated in the practice of skating and, thereby, would incite them to return to the rink and use the equipment during their spare time.

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